

COST ESTIMATES FOR MOVING THE GEOLOGICAL SURVEY PROGRAM, DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, FROM VERMILLION TO RAPID CITY OR PIERRE

Mission of DENR's Geological Survey Program

The mission of DENR's Geological Survey is to perform scientific investigations that are designed to generate information on South Dakota's geologic and hydrologic resources. Fundamental aspects include the collection, interpretation, and dissemination of geologic and hydrologic information leading to:

- (1) a better understanding of the geology and hydrology of South Dakota,
- (2) better and easier use of the information by government, industry, and the public for decisions related to resource development and protection,
- (3) greater economic development, and
- (4) a better quality of life for South Dakota's citizens.

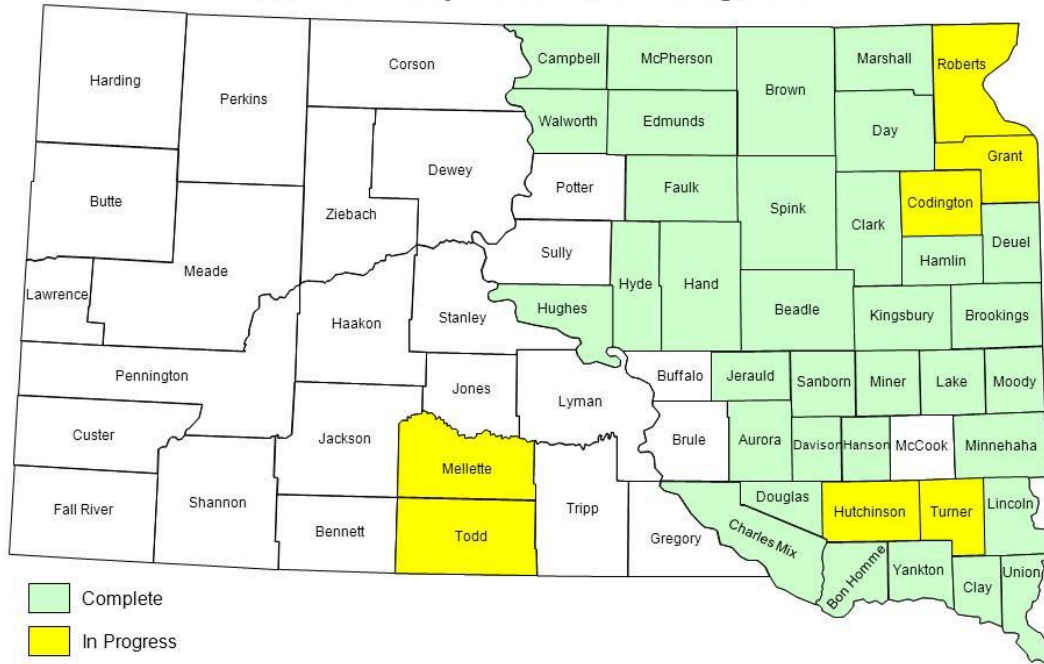
Why is DENR's Geological Survey Program on the University of South Dakota (USD) Campus in Vermillion?

The state institution presently known as the Geological Survey Program, Department of Environment and Natural Resources, was established 119 years ago by the South Dakota legislature on March 6, 1893. Throughout the years, the institution has been known by varying names such as South Dakota Geological Survey, South Dakota Geological Survey and Biological Survey, South Dakota State Geological and Natural History Survey, and South Dakota State Geological Survey. The Geological Survey Program was initially placed under the jurisdiction of the Board of Regents. The first State Geologist also served as the professor of geology at the University of South Dakota. Thus began the long-lived presence of the Geological Survey Program in Vermillion.

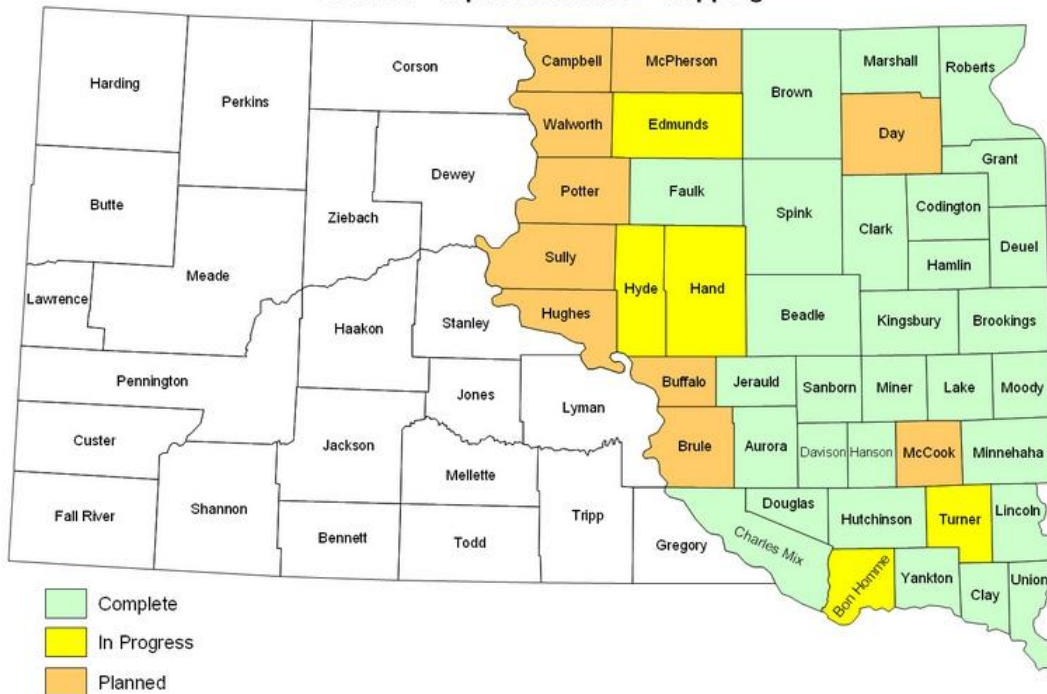
In 1939, the legislature revised the statute that had created the Geological Survey. This legislative action removed the Geological Survey from the jurisdiction of the Board of Regents and placed supervisory responsibilities with the Governor. While the Geological Survey Program has remained in the executive branch of state government since that time, 20 of its 22 FTE remain stationed on the USD campus. Having the Survey in Vermillion has allowed DENR to station 3 FTE from other programs (i.e. Air Quality, Surface Water, and Watershed Protection) in Vermillion as well to provide better customer services and cut travel costs and time. These 23 FTE stationed in Vermillion have a total combined 354 years of experience in DENR.

The Vermillion location has worked well for several reasons. As eastern South Dakota became more populated, people needed natural resources such as water and minerals. However, the geology of eastern South Dakota is incredibly complex due to its glaciated origins. Therefore, the Geological Survey began what is called its county and aquifer materials studies. Drilling and mapping is done county by county to determine the geology and identify sources of ground water, sands, and gravels. The maps below show the status of these studies together with an example of a completed aquifer materials map that shows aquifer boundaries of shallow and buried aquifers in Lincoln County. These types of maps are extremely useful to enhance aquifer management and protection. Other maps of surface geology, buried-bedrock geology, aquifers, and ground water quality studies are available on DENR's website at <http://www.sdgs.usd.edu/>.

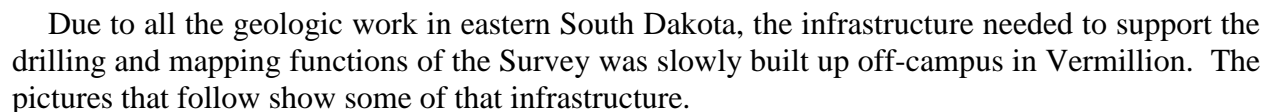
Status of Countywide Resource Investigations



Status of "Aquifer Materials" Mapping



Department of Environment and Natural Resources
Division of Financial and Technical Assistance
Geological Survey
Aquifer Materials Map 26
Wall A. McCormick, 2007





Picture 1 - Headquarters for the drill crews.



Picture 2 – The drill rig maintenance shop and storage building for drilling supplies.



Picture 3 – The Survey's Mobile B-61 drill rig in the maintenance shop.



Picture 4 – Inside of drill rig maintenance shop.



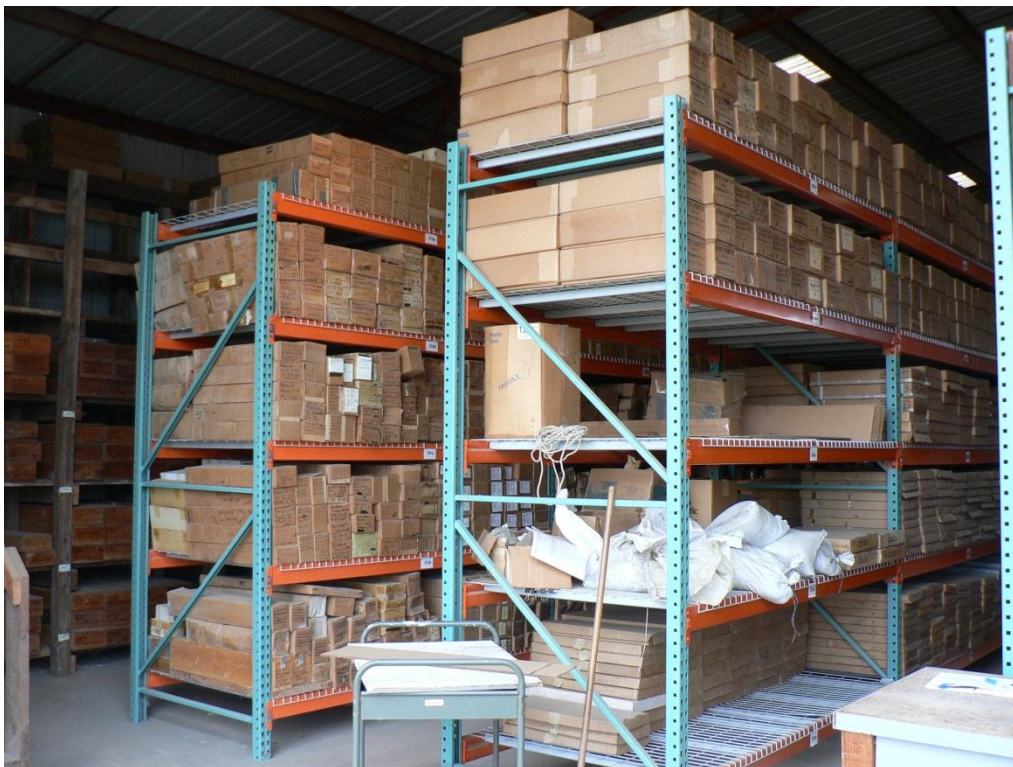
Picture 5 – Inside of building where bentonite, cement, and other drilling supplies are stored.



Picture 6 – Water truck that is also used to haul drill stem, casing, and augers to drill sites.



Picture 7 – Storage building for core and cuttings collected statewide.



Picture 8 – Inside of building where cores and cuttings from across the state are stored.

Having the Geological Survey Program on the USD campus has been mutually beneficial. The geology program at USD is called Earth Sciences. DENR's Geological Survey Program is housed in the Akeley-Lawrence Science Center, which is pictured below, and houses the USD Physics and Earth Sciences Departments as well.



Picture 9 – Akeley-Lawrence Science Center on USD campus that houses the USD Departments of Physics and Earth Sciences together with DENR's Geological Survey Program

The Earth Sciences Department typically has 20-25 students who have declared Earth Science as their major. DENR's Geological Survey Program provides subject matter and assistance to professors and students for the senior projects. In addition, the Geological Survey Program employs 3-4 of these students as seasonal employees on the drill rigs and interns every year, thereby providing experiences that ultimately make the students more employable. Finally, the close corroboration with the Earth Science Department allows DENR to recruit graduating students. Currently, 6 of DENR's employees in Vermillion are graduates from USD.

DENR's Geological Survey Program also has Employees Stationed in Rapid City

The Geological Survey Program has 2 FTE stationed at DENR's office in Rapid City. Besides working on west river geologic issues, this allows close coordination with the Department of Geology and Geological Engineering at the School of Mines & Technology (SDSM&T). For example, professors and students at SDSM&T have been, and will continue to be, authors and co-authors on geologic maps and other investigations of the state's natural resources that are published by the Geological Survey Program. Providing of subject matter for student projects and degrees by the Geological Survey Program and direct interaction with students occurs at the South Dakota School of Mines and Technology just as it does at the University of South Dakota. The Geological Survey Program commonly hires 1-2 geology students from SDSM&T to assist with summer activities. In summary, there is mutual benefit gained because of the Geological Survey Program's involvement at both universities.

Estimated Costs to Move Physical Assets of the Geological Survey Program from Vermillion

An estimate was obtained from Parker Transfer & Storage, Inc. (located in Sioux Falls), for moving most physical assets of the Geological Survey Program in Vermillion to either Rapid City or Pierre. An estimate from Compass Engineering Corporation (located in Georgia) was obtained for moving the Geological Survey Program's x-ray diffractometer (see Pictures 8 and 9 below) because this company specializes in moving sensitive pieces of equipment such as this. The x-ray diffractometer is a large laboratory instrument used to determine the mineralogy of powdered rock and sediment samples.



Picture 10 – X-ray diffractometer



Picture 11 – X-ray diffractometer chiller

Moving cost estimates are:

- \$2,217,303 to move to Rapid City,
- \$2,156,015 to move to Pierre, and
- \$ 16,995 to move the x-ray diffractometer.

Discussion with the representative from Parker Transfer & Storage indicated that much work would likely have to be done by Geological Survey Program personnel in preparation for movement of the inventory of drill core and cuttings. There are approximately 10,000-11,000 boxes of core and cuttings in the inventory. As a result of the age of some boxes and because of the swings in temperature extremes from summer to winter in the storage area for these boxes, many of the storage boxes are in a physical state that is not appropriate for truck transport to a distant facility. The representative from Parker Transfer & Storage indicated in one comment that up to 90 percent of the inventory may have to be re-boxed in new boxes before they would be accepted for transport. This assessment and re-boxing would take months of work by Geological Survey Program personnel to accomplish and the associated costs cannot presently be estimated.

Estimated Cost for Space of Similar Size and Function for use by the Geological Survey Program in Rapid City or Pierre

An assessment of the sizes and types of space presently utilized by the Geological Survey Program was performed (see Attachment A). This assessment was provided to the Office of the State Engineer for the purpose of estimating the cost of building space of similar size and function in Rapid City and Pierre. The estimates from the Office of the State Engineer (see Attachment B) for construction of a single building with the sizes and types of spaces presently used by the Geological Survey Program are as follows:

- \$4,535,244 in Rapid City, and
- \$4,864,584 in Pierre.

Neither of these estimates include the purchase of property upon which to construct a building. Other factors that would influence actual cost include site work, right of way, approaches, parking lot size, and site utilities. Those costs are site specific and are not included in the cost estimate provided by the Office of the State Engineer.

Estimated Cost for Property on which to Build Space of Similar Size and Function

A realtor was contacted to obtain an estimate of the cost to acquire property that would be needed for construction of new space to replace what we are using in Vermillion. Property cost estimates are:

- \$751,410 in Rapid City, and
- \$457,380 in Pierre.

Estimated Costs to Move Employee Households

Parker Transfer & Storage, Inc. provided some very approximate estimates of the cost to move employee households from Vermillion to Rapid City and Pierre. None of the households were visited by Parker Transfer & Storage. DENR has 16 Vermillion-based employees who own their homes and 7 Vermillion-based employees who rent their living quarters. The very approximate estimate from Parker Transfer for moving the contents of a 3-bedroom home to Rapid City was \$8,000 and to Pierre was \$7,500. The very approximate estimate for moving the contents of a 2-bedroom apartment to Rapid City was \$4,000 and to Pierre was \$3,500. In applying these estimates to homeowners and renters, the following costs are estimated to move employee households:

- \$156,000 to move employee households to Rapid City, and
- \$144,500 to move employee households to Pierre.

Summary of Estimated Costs

Known, quantifiable, major, and estimated costs are summarized in the table below.

Item	Estimated cost for move to Rapid City	Estimated cost for move to Pierre
All movable, Vermillion-based, physical assets of the Geological Survey Program excluding the x-ray diffractometer	\$2,217,303 ¹	\$2,156,015 ¹
X-ray diffractometer	\$16,995	\$16,995
Newly constructed building space with needed functionality	\$4,535,244	\$4,864,584
Land on which to construct a building or buildings	\$751,410	\$457,380
Site work, right of way, approaches, parking lot, site utilities	\$??????? site specific	\$??????? site specific
Vermillion-based DENR employee households	\$156,000	\$144,500
Total	\$7,676,952	\$7,639,474

¹ Does not include Geological Survey Program staff time and materials required to re-box a significant percentage of the core & cuttings inventory.

ATTACHMENT A

Assessment of Geological Survey Program Space

The Geological Survey Program, Department of Environment and Natural Resources (DENR), has its main office located in Vermillion and also utilizes space in DENR's Rapid City office for permanent and seasonal staff. The categories, sizes, and owners of space utilized in Vermillion and Rapid City are listed below.

Space category	Location	Owner	Square feet	Electricity	Heat	Air condition	Water in building	Restroom in building
Office	Vermillion	USD ¹	5,085	Yes	Yes	Yes	Yes	Yes
Office	Vermillion	DENR	840	Yes	Yes	Yes	Yes	Yes
Map, file, and publication storage	Vermillion	USD	2,302	Yes	Yes	Yes	Yes	Yes
Map, file, and publication storage	Vermillion	DENR	585	Yes	Yes	Minimal	Yes	Yes
Parts and equipment storage	Vermillion	DENR	702	Yes	Yes	Minimal	Yes	Yes
Staging area for water-sampling activities	Vermillion	DENR	473	Yes	Yes	Minimal	Yes	Yes
Laboratory	Vermillion	USD	426	Yes	Yes	Yes	Yes	Yes
Laboratory	Vermillion	DENR	1,200	Yes	Yes	Yes	Yes	Yes
Maintenance shop	Vermillion	DENR	2,091	Yes	Yes	No	Yes	No
Drilling supplies and equipment storage	Vermillion	DENR	3,977	Yes	No	No	No	No
Core and cuttings storage	Vermillion	DENR	5,151	Yes	No	No	No	No
Three lots of land	Vermillion	DENR	70,149	N/A	N/A	N/A	N/A	N/A
Other DENR office space	Vermillion	USD	580	Yes	Yes	Yes	Yes	Yes
Office	Rapid City	Leased space ²	720	Yes	Yes	Yes	Yes	Yes

¹ USD = University of South Dakota.

² The DENR office in Rapid City does not have space available to accommodate more employees.

ATTACHMENT B

Building Cost Estimates Received from the Office of the State Engineer

DENR building budget estimates					
space	square feet	RC cost/sf	Pierre cost/sf	total RC cost	total Pierre cost
office	7225	\$235	\$245	\$1,697,875	\$1,770,125
conditioned storage	4062	\$150	\$160	\$609,300	\$649,920
lab	1626	\$285	\$300	\$463,410	\$487,800
maintenance shop	2091	\$115	\$125	\$240,465	\$261,375
unconditioned storage	9128	\$65	\$75	\$593,320	\$684,600
site/parking lot				\$175,000	\$200,000
sub total	24132			\$3,779,370	\$4,053,820
contingency 10%				\$377,937	\$405,382
soft costs 10%				\$377,937	\$405,382
total estimate				\$4,535,244	\$4,864,584
combined cost/sf		\$188	\$202		